Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_

**Quantum Number Homework**

1. Circle all of the following orbital destinations that are theoretically possible.
   1. 7s
   2. 1p
   3. 5d
   4. 2d
   5. 4f
   6. 5g
   7. 6i
2. Explain why the following ground-state electron configurations are not possible:
   1. 1s22s32p3
   2. 1s22s22p33s6
   3. 1s22s22p73s23p8
   4. 1s22s22p63s23p14s23d14
3. Give two examples (i.e. list 2 elements that are examples) of:
   1. an atom with a half-filled subshell
   2. an atom with a completely-filled outer shell
4. What are the possible ml values for the each of the following types of orbitals?
   1. s
   2. p
   3. d
   4. f
5. Write the values for the quantum numbers for the **bold** electron in the following diagrams:

a. 3p: c. 4d:

b. 5s: d. 3d:

1. 